

**COMMONWEALTH OF VIRGINIA  
Department of Environmental Quality  
Tidewater Regional Office**

**STATEMENT OF LEGAL AND FACTUAL BASIS**

Sentara Norfolk General Hospital  
600 Gresham Drive  
Norfolk, Virginia

Permit No. TRO60164

Title V of the 1990 Clean Air Act Amendments required each state to develop a permit program to ensure that certain facilities have federal Air Pollution Operating Permits, called Title V Operating Permits. As required by 40 CFR Part 70 and 9 VAC 5 Chapter 80, Sentara Norfolk General Hospital has applied for a Title V Operating Permit for its Norfolk, Virginia, facility. The Department has reviewed the application and has prepared a draft Title V Operating Permit.

Engineer/Permit Contact:\_\_\_\_\_

Date:

Air Permit Manager:\_\_\_\_\_

Date:

Deputy Regional Director:\_\_\_\_\_

Date:

## **FACILITY INFORMATION**

### Permittee

Sentara Norfolk General Hospital  
600 Gresham Drive  
Norfolk, Virginia 23507-9971

### Facility

Sentara Norfolk General Hospital  
600 Gresham Drive  
Norfolk, Virginia 23507-9971

AFS Id. No.: 51-710-00042

## **SOURCE DESCRIPTION**

SIC Code: 8062 - The source is a hospital, providing general medical and surgical services, and other hospital services. The emissions units at the facility include boilers and generators.

The facility is a Title V major source of Sulfur Dioxide and Nitrogen Oxides. This source is located in a nonattainment area for Volatile Organic Compounds and Nitrogen Oxides, and is a PSD major-sized source. The facility is currently permitted under two Minor NSR Permits, issued on September 3, 1976, and April 17, 1980.

## **COMPLIANCE STATUS**

A full compliance evaluation of this facility, including a site visit, has been conducted. In addition, all reports and other data required by permit conditions or regulations, which are submitted to DEQ, are evaluated for compliance. Based on these compliance evaluations, the facility has not been found to be in violation of any state or federal applicable requirements at this time.

## EMISSION UNIT AND CONTROL DEVICE IDENTIFICATION

The emissions units at this facility consist of the following :

Unit Id.	Description	Size/Rated Capacity	Applicable Permit Date
1B	#6 fuel oil / natural gas boiler; manufactured in 1977	37.5 mmBtu/hr	NSR permit (9/3/1976)
2B	#6 fuel oil / natural gas boiler; manufactured in 1977	37.5 mmBtu/hr	NSR permit (9/3/1976)
3B	#6 fuel oil / natural gas boiler; manufactured in 1980	37.5 mmBtu/hr	NSR permit (4/17/1980)
4B	Natural gas boiler; manufactured in 1988	37.5 mm/Btu/hr	
A	Diesel generator	965 kilowatts	
B	Diesel generator	1,000 kilowatts	
1	Diesel generator	680 kilowatts	
2	Diesel generator	680 kilowatts	
3	Diesel generator	750 kilowatts	
4	Diesel generator	750 kilowatts	

## EMISSIONS INVENTORY

A copy of the 2003 annual emission statement is attached. Emissions are summarized in the following tables.

	VOC	CO	SO <sub>2</sub>	PM <sub>10</sub>	NO <sub>x</sub>
Total (tons/yr)	0.91	7.16	156.91	9.40	35.93

## **EMISSION UNIT APPLICABLE REQUIREMENTS - emission units 1B and 2B**

### ***Limitations***

The following Title V permit limitations are derived from the NSR permit issued September 3, 1976:  
Section III.A - conditions 1 and 2

The following Virginia Administrative Codes have specific requirements that have been determined to be applicable:

9 VAC 5-40-900 - Existing Source Standard for Particulate Matter

### ***Monitoring***

The NSR permit dated September 3, 1976 does not include any specific monitoring requirements. The permittee is required to perform periodic visual evaluations to determine compliance with the opacity standard. If opacity is indicated, corrective action will be taken, or a Method 9 visible emission evaluation will be performed.

The following demonstration is provided to show that there is not a great likelihood that the Particulate Matter emission limit will be exceeded, therefore, no periodic monitoring is provided for this pollutant:

$$\text{AP42 Emission Factor: PM} = 8.34[1.12(\text{S}) + 0.37] = [9.34(\text{S}) + 3.09] \text{ lb/1000 gal}$$

Sulfur Content of #6 fuel = 2.5%

Heating Value of #6 fuel = 150,000 Btu/gal

Emission Unit 1B = 37.5 million Btu/hr

Emission Unit 2B = 37.5 million Btu/hr

Particulate Matter Emissions from 1B and 2B, each:

$$(37.5 \text{ mmBtu/hr} / 150,000 \text{ Btu/gal}) = 250 \text{ gal/hr}$$

$$\text{PM} = [9.34(2.5) + 3.09] \text{ lb} / 1000 \text{ gal} \times 250 \text{ gal/hr} = \mathbf{6.6 \text{ lbs/hr PM}}$$

$$\text{Title V permitted rate} = \mathbf{11.3 \text{ lbs/hr PM}}$$

The following demonstration is provided to show that there is not a great likelihood that the Sulfur Dioxide emission limit will be exceeded; therefore, no periodic monitoring is provided for this pollutant:

$$\text{AP42 Emission Factor: SO}_2 = 157\text{S lb/1000 gal, where S = sulfur content}$$

Sulfur Content of #6 fuel = 2.5%

Heating Value of #6 fuel = 150,000 Btu/gal

Emission Unit 1B = 37.5 million Btu/hr

Emission Unit 2B = 37.5 million Btu/hr

Sulfur Dioxide Emissions from 1B and 2B, each:  
 $(37.5 \text{ mmBtu/hr} / 150,000 \text{ Btu/gal}) = 250 \text{ gal/hr}$

$$\text{SO}_2 = (157 \times 2.5) \text{ lb} / 1000 \text{ gal} \times 250 \text{ gal/hr} = \mathbf{98.1 \text{ lbs/hr SO}_2, \text{ each}}$$

Title V permitted rate = **99.0 lbs/hr PM, each**

### ***Recordkeeping***

The permit includes requirements for maintaining records of all monitoring and testing required by the permit. The source must also maintain records of parameters for the demonstration of compliance with emission limits required by the permit. The required records include the types of fuel combusted in the boilers, fuel throughputs, fuel sulfur certifications, emission factors and equations used to demonstrate compliance with emission limits, records of visual evaluations, visible emissions evaluations and any corrective action necessary.

### ***Reporting***

There are no specific reporting requirements for these units.

### ***Streamlined Requirements***

The following conditions from the September 3, 1976 NSR permit have been satisfied and are not included in the Title V operating permit:

- < A final completion report must be submitted to the Board and Regional Director within 10 days after the boilers are first put into operation.
- < A plume evaluation is required by a qualified staff member.

## EMISSION UNIT APPLICABLE REQUIREMENTS - emission unit 3B

### **Limitations**

The following Title V permit limitations are derived from the NSR permit issued April 17, 1980:  
Section IV.A - conditions 1, 2, 3, and 5.

The following Virginia Administrative Codes have specific requirements that have been determined to be applicable:

### **Monitoring**

The NSR permit dated April 17, 1980, does not include any specific monitoring requirements. The permittee is required to perform periodic visual evaluations to determine compliance with the opacity standard. If opacity is indicated, corrective action will be taken, or a Method 9 visible emission evaluation will be performed.

The following demonstration is provided to show that there is not a great likelihood that the Particulate Matter, Sulfur Dioxide and Nitrogen Oxides emission limits will be exceeded, therefore, no periodic monitoring is provided for these pollutants:

$$\begin{aligned}\text{AP42 Emission Factor: PM} &= 8.34[1.12(\text{S}) + 0.37] = [9.34(\text{S}) + 3.09] \text{ lb/1000 gal} \\ \text{SO}_2 &= 157\text{S lb/1000 gal} \\ \text{NO}_x &= 55 \text{ lb/1000 gal}\end{aligned}$$

Rated capacity of the unit = 239 gal/hr  
Sulfur Content of #6 fuel = 2.2%  
Heating Value of #6 fuel = 150,000 Btu/gal  
Emission Unit 3B = 37.5 million Btu/hr  
Operating limitation = 4,380 hours/yr

Particulate Matter Emissions from 3B:

$$\begin{aligned}\text{PM} &= [9.34(2.2) + 3.09] \text{ lb} / 1000 \text{ gal} \times 239 \text{ gal/hr} = \mathbf{5.6 \text{ lbs/hr PM}} \\ &= (5.9 \text{ lbs/hr}) \times (4,380 \text{ hrs/yr}) / (2000 \text{ lbs/ton}) = \mathbf{12.9 \text{ tons/yr PM}}\end{aligned}$$

$$\begin{aligned}\text{Title V permitted rates} &= \mathbf{6.0 \text{ lbs/hr PM}} \\ &= \mathbf{13.1 \text{ tons/yr PM}}\end{aligned}$$

Sulfur Dioxide Emissions from 3B:

$$\begin{aligned}\text{SO}_2 &= (157)(2.2) \text{ lb} / 1000 \text{ gal} \times 239 \text{ gal/hr} = \mathbf{82.6 \text{ lbs/hr SO}_2} \\ &= (82.6 \text{ lbs/hr}) \times (4,380 \text{ hrs/yr}) / (2000 \text{ lbs/ton}) = \mathbf{180.8 \text{ tons/yr}}\end{aligned}$$

$$\begin{aligned}\text{Title V permitted rates} &= \mathbf{82.6 \text{ lbs/hr}} \\ &= \mathbf{180.8 \text{ tons/yr}}\end{aligned}$$

Nitrogen Oxides Emissions from 3B:

$$\text{NO}_x = (55 \text{ lbs} / 1000 \text{ gal}) \times 239 \text{ gal/hr} = \mathbf{13.1 \text{ lbs/hr}}$$
$$(13.1 \text{ lbs/hr}) \times (4,380 \text{ hrs/yr}) / (2000 \text{ lbs/ton}) = \mathbf{28.7 \text{ tons/yr}}$$

$$\text{Title V permitted rates} = \mathbf{14.3 \text{ lbs/hr}}$$
$$\mathbf{31.4 \text{ tons/yr}}$$

### ***Recordkeeping***

The permit includes requirements for maintaining records of all monitoring and testing required by the permit. The source must also maintain records of parameters for the demonstration of compliance with emission limits required by the permit. The required records include the types of fuel combusted in the boilers, fuel throughputs, fuel sulfur certifications, emission factors and equations used to demonstrate compliance with emission limits, records of visual evaluations, visible emissions evaluations and any corrective action necessary.

### ***Reporting***

There are no specific reporting requirements for these units.

### ***Streamlined Requirements***

The following conditions from the April 17, 1980 permit have been satisfied and are not included in the Title V operating permit:

- < Quarterly progress reports shall be submitted to the Board.
- < A final completion report must be submitted to the Board and Regional Director within 5 days after the boiler is put into operation.
- < A visible emissions evaluation is required by a qualified staff member.

## **EMISSION UNIT APPLICABLE REQUIREMENTS - emission unit 4B**

### ***Limitations***

This unit is a natural gas-fired boiler. Although exempt from the permitting requirements of 9 VAC 5 Chapter 80, Part II, Article 6, the unit is subject to the recordkeeping and reporting requirements of 40 CFR 60 Subpart Dc.

The following Virginia Administrative Codes that have specific emission requirements have been determined to be applicable:

9 VAC 5-40-900 - Existing Source Standard for Particulate Matter

### ***Monitoring***

The permittee is required to perform periodic visual evaluations to determine compliance with the opacity standard. If opacity is indicated, corrective action will be taken, or a Method 9 visible emission evaluation will be performed.

The following demonstration is provided to show that there is not a great likelihood that the Particulate Matter emission limit will be exceeded, therefore, no periodic monitoring is provided for this pollutant:

AP42 Emission Factor: PM = 7.6 lb/1,000,000 ft<sup>3</sup>

Heating Value of natural gas = 1,050 Btu/ft<sup>3</sup>  
Emission Unit 4B = 37.5 million Btu/hr

Particulate Matter Emissions from 4B:  
(37.5 mmBtu/hr / 1,050 Btu/ft<sup>3</sup>) = 35,714 ft<sup>3</sup>/hr

PM = (7.6 lb / 1,000,000 ft<sup>3</sup>) x (35,714 ft<sup>3</sup>/hr) = **0.3 lbs/hr PM**

Title V permitted rate = **11.3 lbs/hr PM**

### ***Recordkeeping and Reporting***

The permit includes requirements for maintaining records of all monitoring and testing required by the permit. The source must also maintain records of parameters for the demonstration of compliance with emission limits required by the permit. The required records include the types of fuel combusted in the boilers, fuel throughputs, emission factors and equations used to demonstrate compliance with emission limits, records of visual evaluations, visible emissions evaluations and any corrective action necessary. Additionally, the recordkeeping and reporting requirements of federal NSPS Subpart Dc (40 CFR 60.48c) apply for this unit.

### ***Streamlined Requirements***

There are no streamlined requirements for this unit.



## **EMISSION UNIT APPLICABLE REQUIREMENTS - emission units A, B, 1, 2, 3, and 4**

### ***Limitations***

These units are emergency generators, exempt from NSR permitting under 9 VAC 5, Chapter 80, Part II, Article 6, but are not insignificant for Title V permitting applicability.

### ***Monitoring***

Although the opacity standard is applicable to these generators, these units are not used as peakers, are limited in use to less than 500 hours per year, and are fueled with diesel fuel. No opacity monitoring will be required. Opacity is not expected.

### ***Recordkeeping and Reporting***

The permit includes requirements for maintaining records of all monitoring and testing required by the permit. The source must also maintain records of parameters for the demonstration of compliance with emission limits required by the permit. The required records include the type of fuel combusted in the generators, the number of hours of operation of the generators, and emission factors and equations used to demonstrate compliance with emission limits.

### ***Streamlined Requirements***

There are no streamlined requirements for this unit.

## **FACILITY WIDE CONDITIONS**

### ***Limitations***

The following Virginia Administrative Codes that have specific emission requirements have been determined to be applicable:

- 9 VAC 5-50-80 - New and Modified Source Standard for Visible Emissions
- 9 VAC 5-50-20 - New and Modified Source Compliance Requirements

### ***Testing***

The permit requires construction of the facility in such a manner so as to allow for emissions testing at any time using appropriate methods.

The permit does not require source tests. A table of test methods has been included in the permit if testing is performed. The Department and EPA have authority to require testing not included in this permit if necessary to determine compliance with an emission limit or standard.

### ***Reporting***

There are no specific reporting requirements in the facility wide requirements.

### ***Streamlined Requirements***

There are no streamlined requirements in the facility wide requirements.

## **GENERAL CONDITIONS**

The permit contains general conditions required by 40 CFR Part 70 and 9 VAC 5-80-110 that apply to all Federal-operating permitted sources. These include requirements for submitting semi-annual monitoring reports and an annual compliance certification report. The permit also requires notification of deviations from permit requirements or any excess emissions.

### **Comments on General Conditions**

#### **B. Permit Expiration**

This condition refers to the Board taking action on a permit application. The Board is the State Air Pollution Control Board. The authority to take action on permit application(s) has been delegated to the Regions as allowed by §2.1-20.01:2 and §10.1-1185 of the *Code of Virginia*, and the "Department of Environmental Quality Agency Policy Statement No. 3-2001".

#### **F. Failure/Malfunction Reporting**

Section 9 VAC 5-20-180 requires malfunction and excess emission reporting within four hours of discovery. Section 9 VAC 5-80-250 of the Title V regulations also requires malfunction reporting; however, reporting is required within two days. Section 9 VAC 5-20-180 is from the general regulations. All affected facilities are subject to section 9 VAC 5-20-180 including Title V facilities. Section 9 VAC 5-80-250 is from the Title V regulations. Title V facilities are subject to both sections. A facility may make a single report that meets the requirements of 9 VAC 5-20-180 and 9 VAC 5-80-250. The report must be made within four daytime business hours of discovery of the malfunction.

#### **J. Permit Modification**

This general condition cites the sections that follow:

9 VAC 5-80-50. Applicability, Federal Operating Permit For Stationary Sources

9 VAC 5-80-190. Changes to Permits.

9 VAC 5-80-260. Enforcement.

9 VAC 5-80-1100. Applicability, Permits For New and Modified Stationary Sources

9 VAC 5-80-1790. Applicability, Permits For Major Stationary Sources and Modifications Located in Prevention of Significant Deterioration Areas

9 VAC 5-80-2000. Applicability, Permits for Major Stationary Sources and Major Modifications Locating in Nonattainment Areas

#### **U. Malfunction as an Affirmative Defense**

The regulations contain two reporting requirements for malfunctions that coincide. The reporting requirements are listed in sections 9 VAC 5-80-250 and 9 VAC 5-20-180. The malfunction requirements are listed in General Condition U and General Condition F. For further explanation see the comments on general condition F.

## **Y. Asbestos Requirements**

The Virginia Department of Labor and Industry under Section 40.1-51.20 of the Code of Virginia also holds authority to enforce 40 CFR 61 Subpart M, National Emission Standards for Asbestos.

### **STATE ONLY APPLICABLE REQUIREMENTS**

The following Virginia Administrative Codes have specific requirements only enforceable by the State and have been identified as applicable by the applicant:

9 VAC 5 Chapter 50, Part II, Article 2 - Standards of Performance for Odorous Emissions  
9 VAC 5 Chapter 60, Part II, Article 5 - Emission Standards for Toxic Pollutants from New and Modified Sources

### **INAPPLICABLE REQUIREMENTS**

The permittee has not identified any requirements to be "inapplicable".

### **INSIGNIFICANT EMISSION UNITS**

The insignificant emission units are presumed to be in compliance with all requirements of the Clean Air Act as may apply. Based on this presumption, no monitoring, recordkeeping or reporting shall be required for these emission units in accordance with 9 VAC 5-80-110.

Insignificant emission units include the following:

Emission Unit No.	Emission Unit Description	Citation	Rated Capacity (9 VAC 5-80-720 C)
AUX	Generator (emergency)	9 VAC 5-80-720 C.4.b.	172 kilowatts

<sup>1</sup>The citation criteria for insignificant activities are as follows:

- 9 VAC 5-80-720 A - Listed Insignificant Activity, Not Included in Permit Application
- 9 VAC 5-80-720 B - Insignificant due to emission levels
- 9 VAC 5-80-720 C - Insignificant due to size or production rate

### **CONFIDENTIAL INFORMATION**

The permittee did not submit a request for confidentiality. All portions of the Title V application are suitable for public review.

### **PUBLIC PARTICIPATION**

The proposed permit will be place on public notice in the The Virginian-Pilot from August 6, 2004 to September 5, 2004.